

PLANTS: THE BASIC RESOURCE

- Plants are the “ultimate” source of organic every in ecosystems:
 - “Food” for animals & microbes
 - Fuel fires
 - Organic carbon to drive bio-geochemical cycles (water, carbon, etc.)
- Plants produce their food from photosynthesis:
 - Get raw material from soil.
 - When leaves are removed from plants, food-producing capacity is reduced.
 - Therefore, we manage amount of “photosynthetic material” on plant
- To manage we must understand biotic and abiotic influences on photosynthesis
- **Overview of Plant Types on Rangeland**
 - Grasses – are plants with long narrow leaves and hollow stems. They produce grain-like seeds and do not have colored flowers.
 - Grass-like plants – look like grasses, but have solid stems (not hollow) without joints. Stems are often triangular. Veins in the leaves are parallel. Sedges and rushes are in this group of plants.
 - Forbs – are herbaceous (non-woody) plants that usually have broad leaves and showy flowers. Most of the plants commonly called wildflowers and range weeds are forbs.
 - Shrubs – are woody plants that usually have broad leaves. They are different from trees because they do not have a main trunk, instead they have several main stems. Some plants can take both a tree and a shrub form depending on soil and topographic conditions.
 - Browse is the part of a shrub plant that is used for forage by wildlife and livestock.
 - Mast is the term for the seeds and berries that shrubs produce and is especially important for wildlife.
 - Weed is a designation that can be given to any plant that grows where it is not wanted or interferes with the growth of desirable plants. The term “weed” is usually reserved for plants that have a persistent and aggressive growth habit. Noxious weeds are those are designated by county, state, or federal governments to require control.
- **Life Span:** Length of time from germination through death of the plant.

- Annual – plants live only one growing season. In Idaho, we have 2 types of annuals:
 - Winter annuals germinate in the fall and form a small rosette of leaves that persists through the winter. The following growing season, the plant continues to grow, flowers, produces seeds sometime in the summer, and then dies.
 - Summer annuals germinate in the spring and complete all growth, including seed production, by the end of the growing season and then die.
- Biennial plants live two growing seasons. Normally these plants form a basal cluster of leaves the first year and send up a seed stalk the second year.
- Perennial plants live from one year to the next, production leaves and stems for more than two years from the same crown. Most range plants are perennial.

- *Why is this important?*

- **Origin: Where a plant came from**

- Native (or endemic) plants are those that originated and evolved in North America.
- Introduced (or exotic) plants were brought to North America from another continent. Several of these plants were intentionally introduced to rangelands because they have good forage value. Other plants, were accidentally introduced to North America usually as contaminants in crop seeds. Weedy introduced plants were accidentally introduced or brought in for their ornamental value, but then “escaped” into rangelands.

Naturalized = introduced plants that are adapted to the climate in which they live and require no external inputs to survive. A good example is Crested Wheatgrass.

- *Why is this important?*

- **Level of Lignification:**

Lignin = an indigestible portion of cell walls that impregnates cellulose to form wood

- Herbaceous = Non-woody plants
 - Plant dies back to ground each year
 - All annuals are herbaceous
 - All grasses and forbs are “herbaceous”

- Woody = Plants with lignified stems – includes trees and shrubs.
- Suffrutescent plants are plants with a woody base, but have herbaceous stems which die back to ground every year.

- **Why is this important?**

- **Season of Growth:**

- Cool season species:
 - Make most growth in cool weather of spring and fall
 - Flower mostly in early summer
 - Have C3 photosynthetic pathway – adapted to cool, wet conditions
 - Provide spring/fall forage at lower elevations and summer forage at high elevations
 - Most plants in Idaho are C3 plants
- Warm season species:
 - Make most growth in warm summer periods
 - Flower from mid-summer to early fall
 - Have C4 photosynthetic pathway – adapted to hotter, drier conditions
 - Provide forage in summer months
 - Warm regions of Idaho have a few C4 plants; southern states such as Texas and New Mexico have nearly all C4 plants
- Evergreen:
 - Woody plants that retain leaves throughout the year
 - Cool-season plants (remember, they photosynthesize in winter)
 - Important forage in drought and winter
- **Forage Value** – Plants can also be classified by how well it provides nutrients to grazing animals. The forage value of a plant varies depending on which animal is grazing it because nutritional needs and dietary preferences differ by species of grazing animals. For example, a plant could have excellent forage value for cattle and poor forage value for deer.
- High forage value designates plants that are nutritious, palatable, and produce abundant forage.

- Medium forage value denotes a plant that will provide adequate nutrients if eaten, however, it is not preferred by animals or does not produce abundant forage.
- Low or poor forage value describes plants that simply do not provide nutrients to the grazing animal. Some plants with poor forage value would be described as poisonous or toxic plants. These plants contain natural chemicals that are harmful to grazing animals and can even cause death if eaten in sufficient quantities.